

Levels and Trends in Infant and Child Injury Mortality in Selected Countries

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The purpose of this presentation is to describe levels of child injury mortality in selected countries, and changes in those levels between 1980 and 1990, or the latest available year.

We will be looking at not only overall mortality but five major causes, paying particular attention to possible problems of compatibility of the data.

These data are derived from vital statistics and census data. The World Health Statistics Annual is the source of the international data. Because conditions are so different between blacks and whites in the United States, I have used NCHS data, in order to present the United States data by race.

Because of the small numbers involved in these cause categories in most countries, data have been aggregated in three year periods around the target years. As you see, the latest data available at best were 1988 to 1990 (See Table 1). Ideally, we should separate the presentation or the examination by age and by sex; by age because of the relative importance of various causes is so different in the infant year—that is, under one year of age—and in the one to four year period.

Analysis by sex, even at these young ages, is important. A substantial male excess is already noticeable, even in the infant period. This was also noted by Anne Tursz.

Unfortunately, the small numbers preclude this level of detail. In future analyses, however, we should aggregate data for longer periods, such as 10 years, and look more closely at age and sex differentiation.

Mortality rates presented are deaths per 100,000 population. The ICD-9 version was used in all instances to code cause of death, except for Sweden in the 1979 to 1981 period, at which time, ICD-8 was still in effect.

Child mortality as it is used in this presentation, refers to the population under five years of age.

As seen in Table 2, there are wide differences among countries in the levels, and as well in the rates of change in those levels. For example, the overall mortality among blacks in the United States is about three times the rate in Sweden for 1990. The differences are even greater—more than six fold—for injury mortality.

Mortality due to injury has declined. It is about 4 to 5 percent annually in most countries, except among blacks in the United States, where the decline was only about two-and-a-half percent, and in Israel, where the rate rose slightly.

Injury mortality constitutes five to ten percent of mortality under five, although the relative importance in the one to four year period is much greater, on the order of 25 to 35 percent, showing the importance of differentiating these two age groups in future analyses.

Figure 1 shows the major causes of child mortality in 1990. Motor vehicle traffic accident, falls, fires, drownings, homicide, and the "other," or residual category. (Rates of less than 1 per 100,000 are not shown.) Of particular note is the high homicide rate in the two U.S. populations. Also notable are the high rates due to drownings in Canada, among U.S. whites, and in New Zealand. Also of particular note is the extremely high rate of the other category, the category of a problematic nature mentioned by Gordon Smith, particularly in Israel.

Pnina Zadka, one of our colleagues here from Israel, tells me that this is probably the result of a change in coding practices.

Figure 2 presents the same data, but on a percentage basis, to illustrate the relative importance of the various causes.

As seen, the "other" category comprises one fourth to two fifths of injury mortality in the other countries.

It is my impression that the various causes comprising the "other" category vary substantially from one country to another, as well as within a single country over time.

The next series of graphs focus on levels and changes in the various major cause categories. Figure 3 shows that motor vehicle traffic accidents are very high, among blacks in the United States and in New Zealand. The range in mortality levels is approximately three-fold between lowest and highest. As seen, the declines achieved by Canada, England and Israel are substantial. The rates in New Zealand and among blacks in the United States are quite high and showed much less of a decline than in the other countries. In fact, motor vehicle accident traffic mortality in these two populations are more than all accident and injury mortality rate of 7.2 in Sweden in the 1990s.

While mortality due to falls (See Figure 4.) is generally the least important contributor to overall injury mortality, the declines reported are rather impressive.

We wonder what led to the declines. Are they are real? Are there any lessons to be learned from these experiences.

Figure 5, showing mortality due to fires and flames, shows substantial reductions. However, the extremely high rate among blacks in the United States is disturbing—it is more than three-and-a-half times the rate of whites in the United States, and 13 times the rate in Sweden. It would be interesting to learn how Sweden has achieved such a low rate.

While the rates have declined for drownings in four countries to under one per 100,000, the situation in New Zealand, while improving, is puzzling. (See Figure 6.) Why is it so much higher there? Is the difference real, or are there problems of comparability of the data?

Figure 7 illustrates an ongoing tragedy in the United States, the homicide mortality of blacks, even to children under five. The rate in 1990 was 10.6, slightly higher than in 1980. There are also increases reported in Israel, and Scotland, and among whites in the United States. The rest of the countries registered some sort of decline, but generally not as strong a decline as in other injury categories. One never likes to see an increase in any kind of mortality, but an increase in homicide mortality is particularly disturbing.

Figure 8 summarizes the changes in injury mortality. Except for Israel, all the countries reported substantial declines in the overall injury mortality. While declines were reported in most of the cause categories, there were, as previously mentioned, increases in the homicide rates in Israel and Scotland and the United States.

Canada reported an increase in the "other" category. As similar increase reported in Israel, is thought to be a data coding artifact.

Hopefully, the answer to these questions, and others that are being raised will come to light in the evolution of the ICE project. Thank you.

Table 1. Data years

Country	Data years around 1980	Data years around 1990
Canada	1979–81	1988–90
England and Wales	1979–81	1989–91
Israel	1979–81	1987–89
New Zealand	1979–81	1987–89
Scotland	1970–81	1989–91
Sweden	1979–81	1989–91
United States—blacks	1980	1990

Note: Deaths are classified according to ICD–9 except for Sweden, which classified deaths according to ICD–8 in 1979–81.

Table 2
Child and child injury mortality in selected countries: 1980–90
deaths per 100,000 population

	1980		1990	
	All causes	Injury	All causes	Injury
Sweden	167.4	11.7	152.1	7.2
United States—whites	283.4	27.7	198.9	19.2
England and Wales	298.9	16.1	193.3	10.2
Scotland	302.8	23.8	190.2	14.0
New Zealand	309.8	36.0	260.0	26.6
Canada	346.8	27.5	180.1	15.9
Israel	432.5	20.6	250.9	20.9
United States—blacks	590.7	53.7	478.3	42.0

Source: WHSA and NCHS

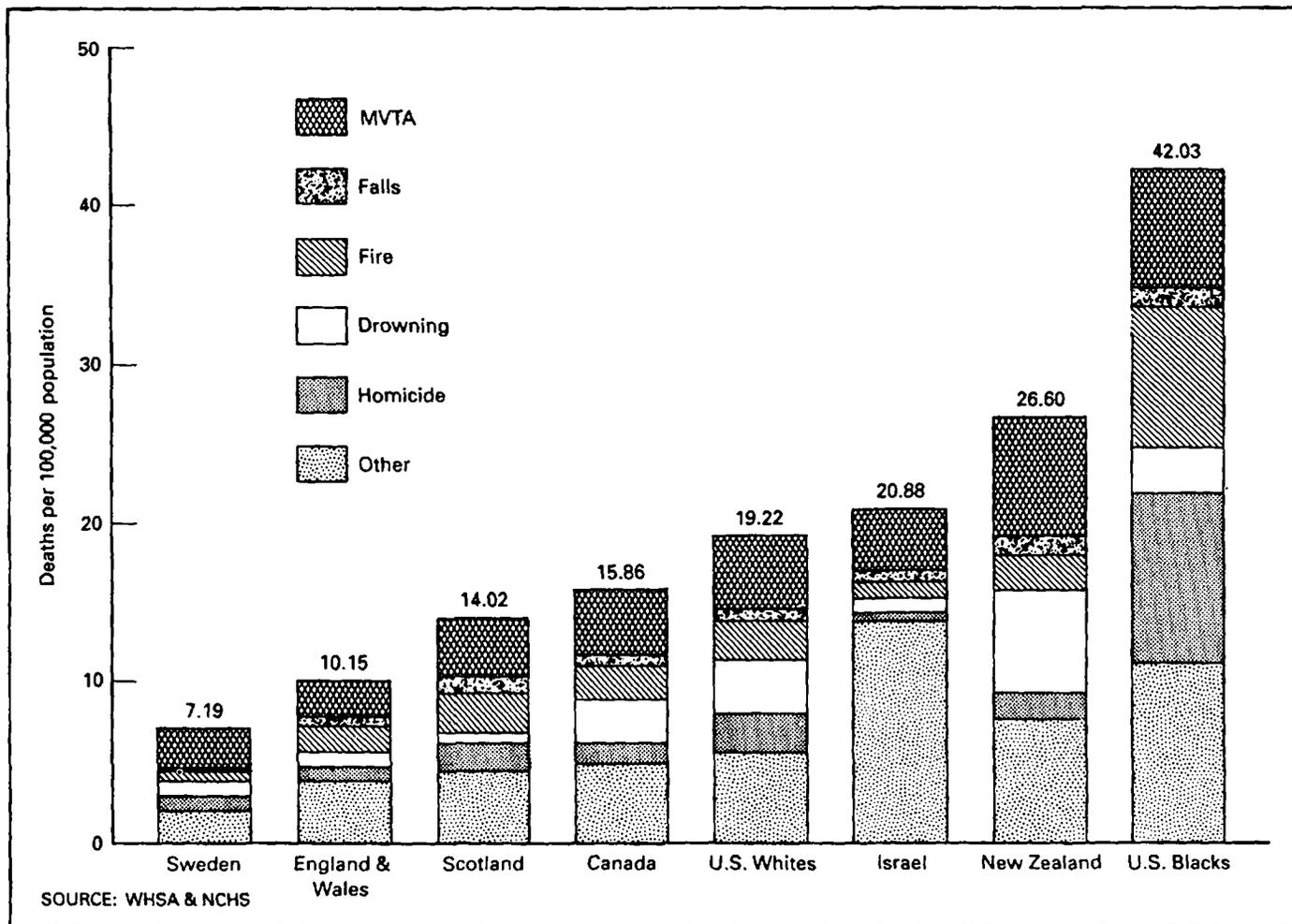


Figure 1. Childhood mortality due to major causes in selected countries: 1990

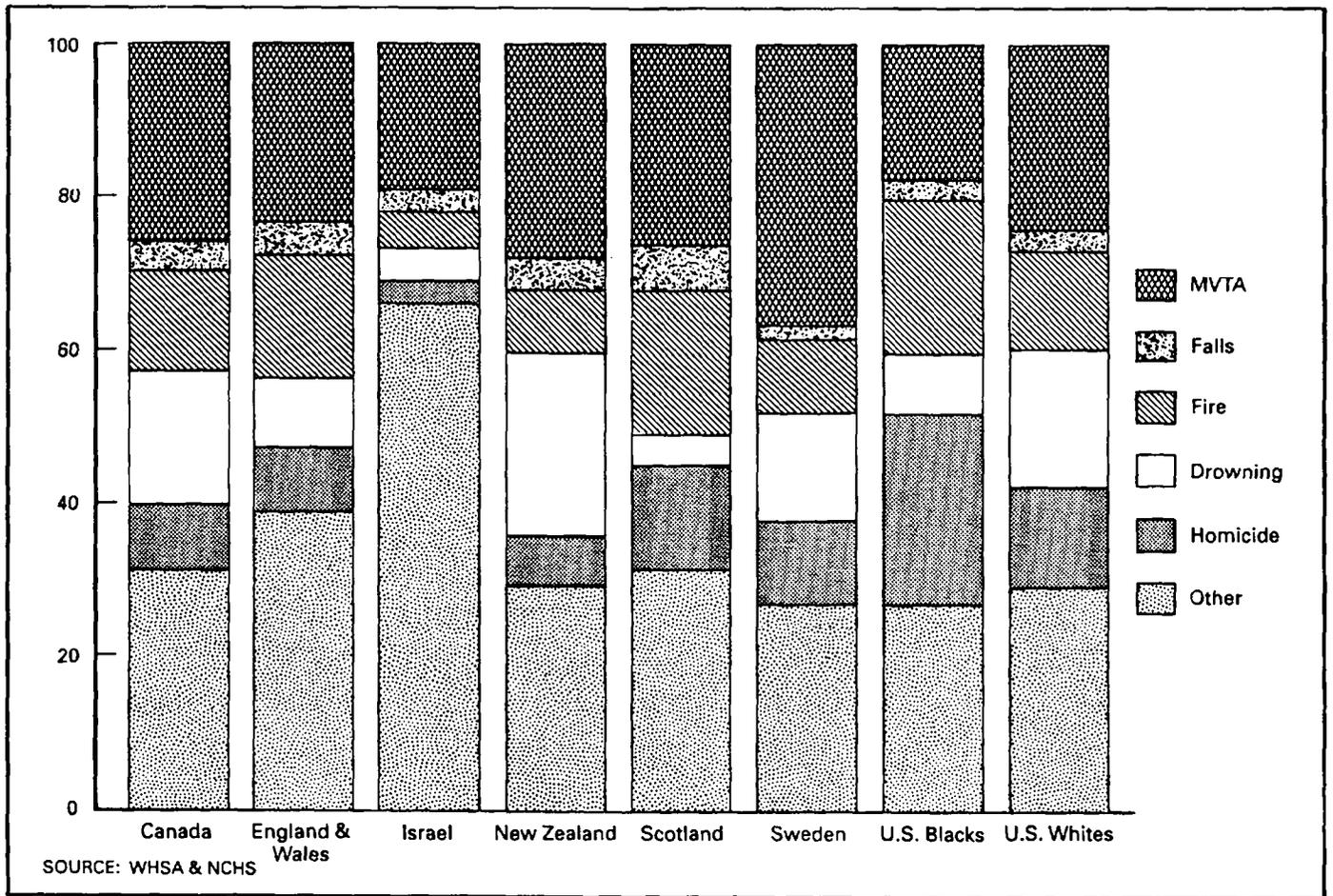


Figure 2. Cause components of childhood injury mortality in selected countries: 1990

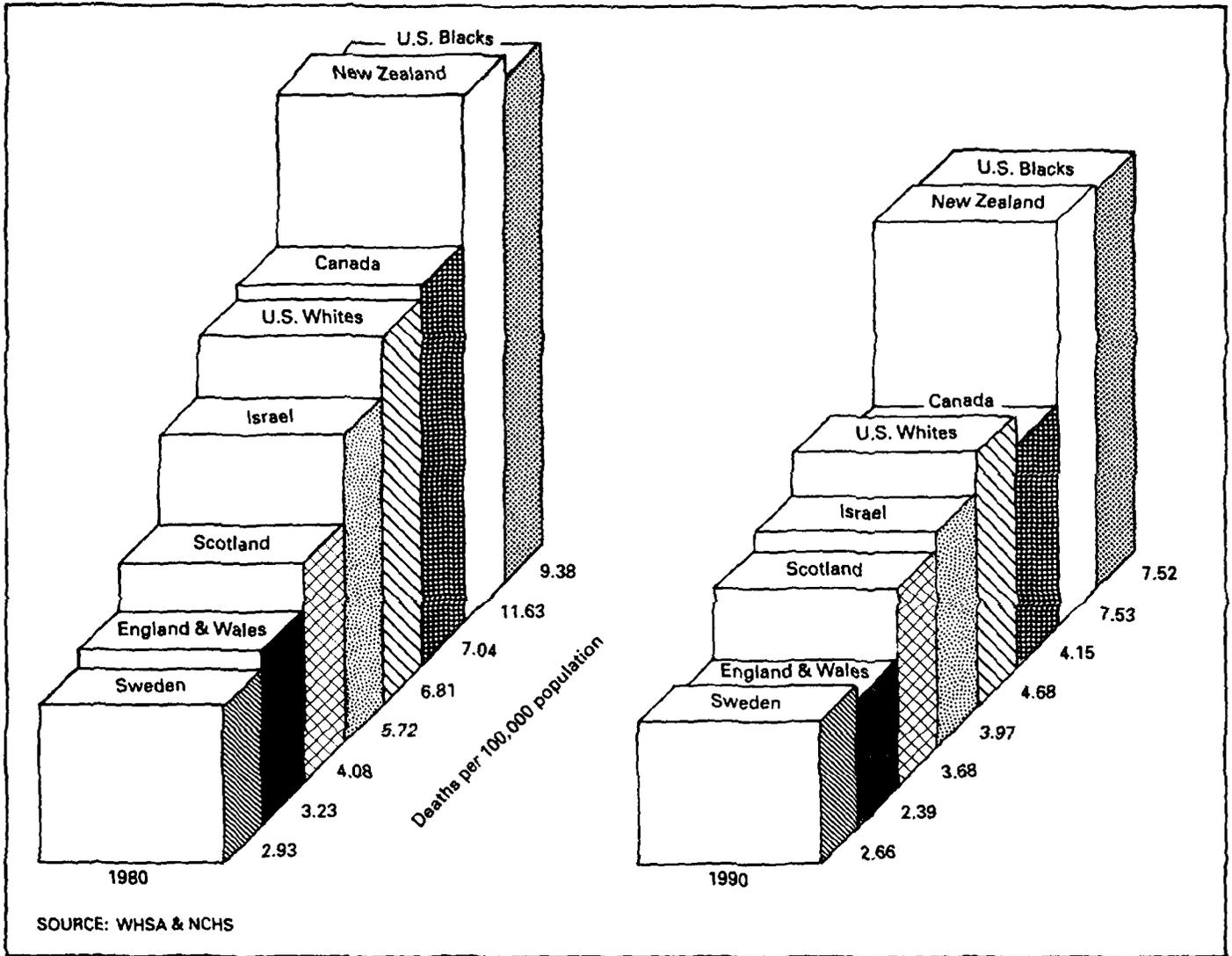


Figure 3. Child mortality due to motor vehicle traffic accidents in selected countries: 1980 and 1990

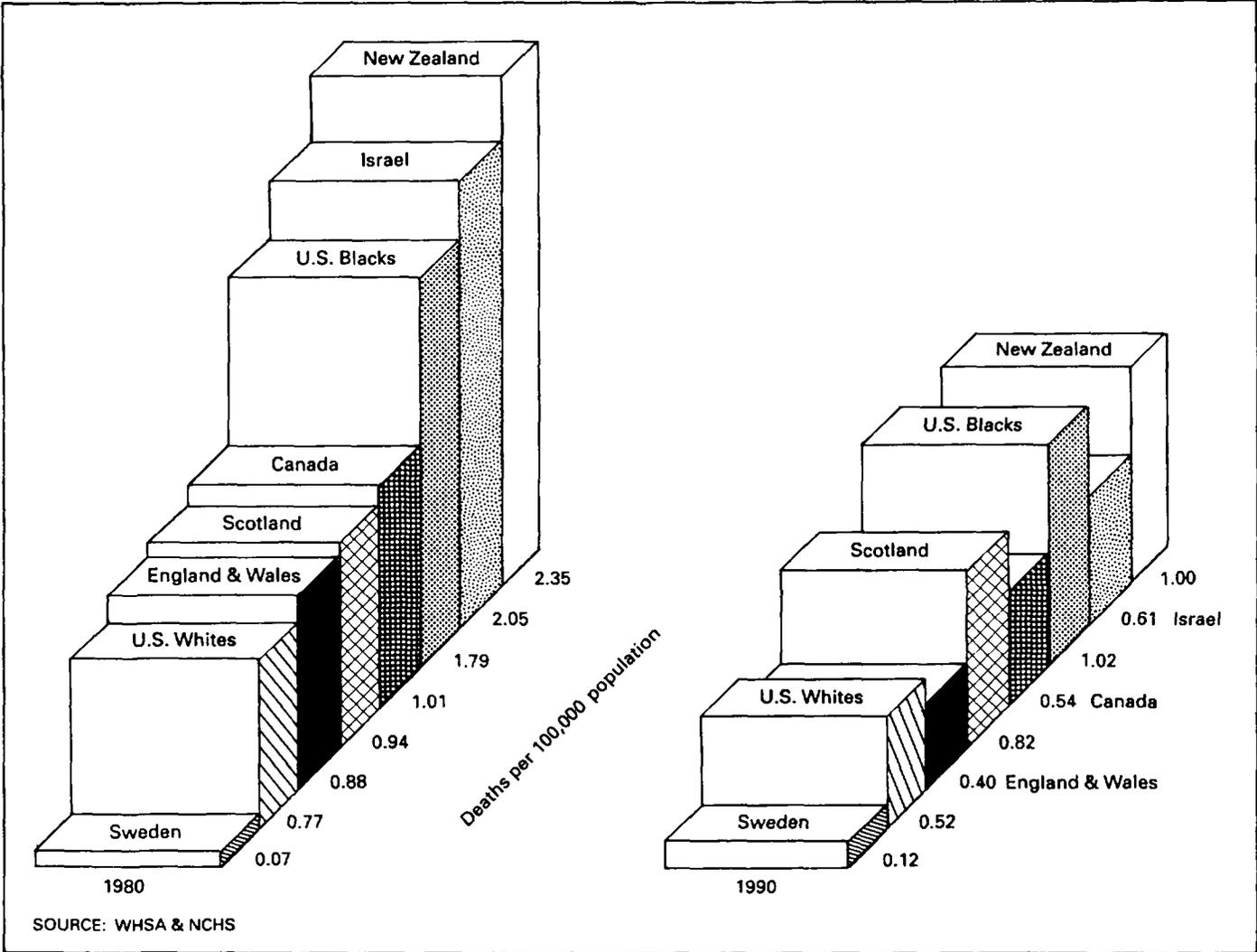


Figure 4. Childhood mortality due to falls in selected countries: 1980 and 1990

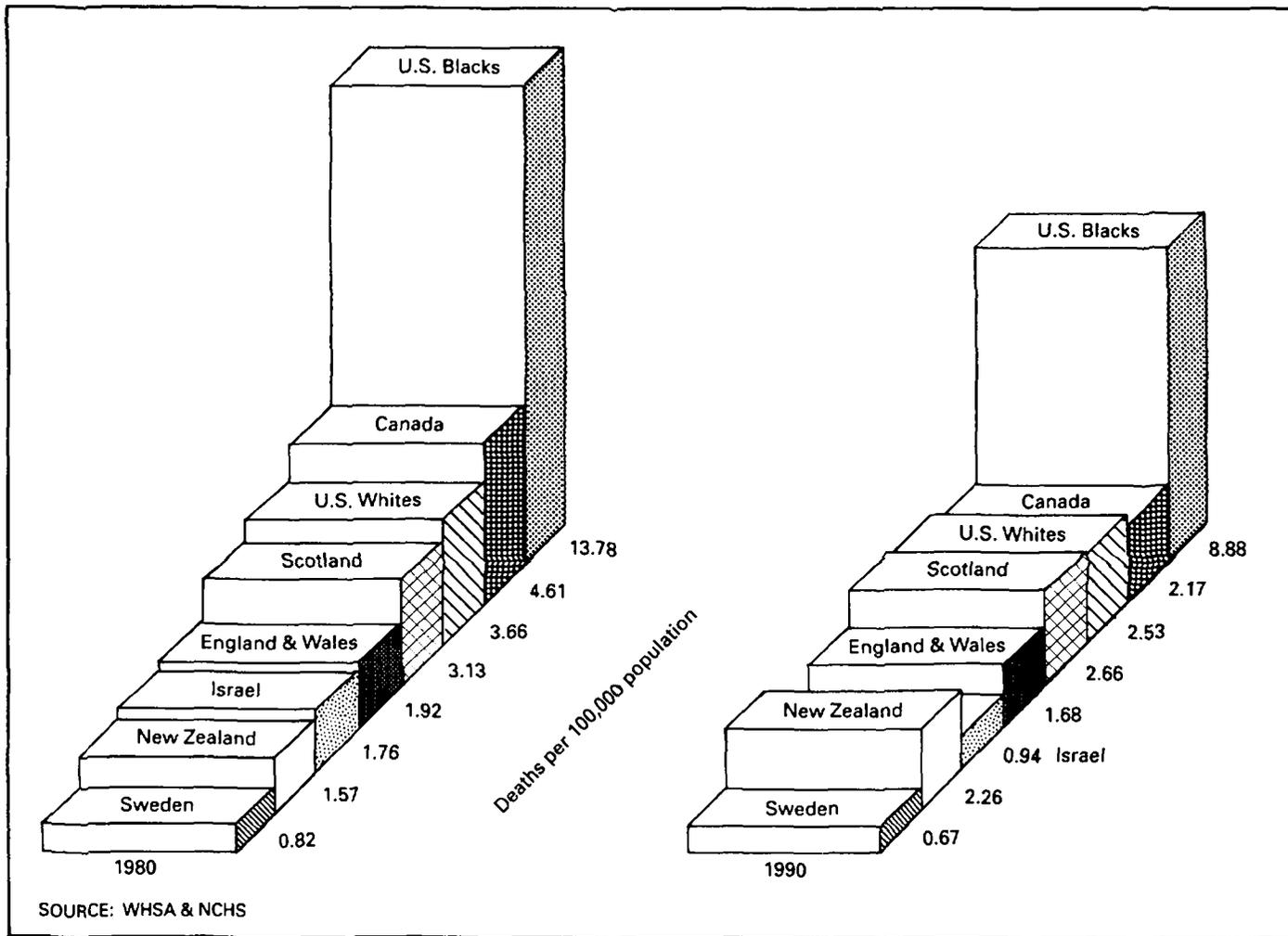


Figure 5. Child mortality due to fire and flames in selected countries: 1980 and 1990

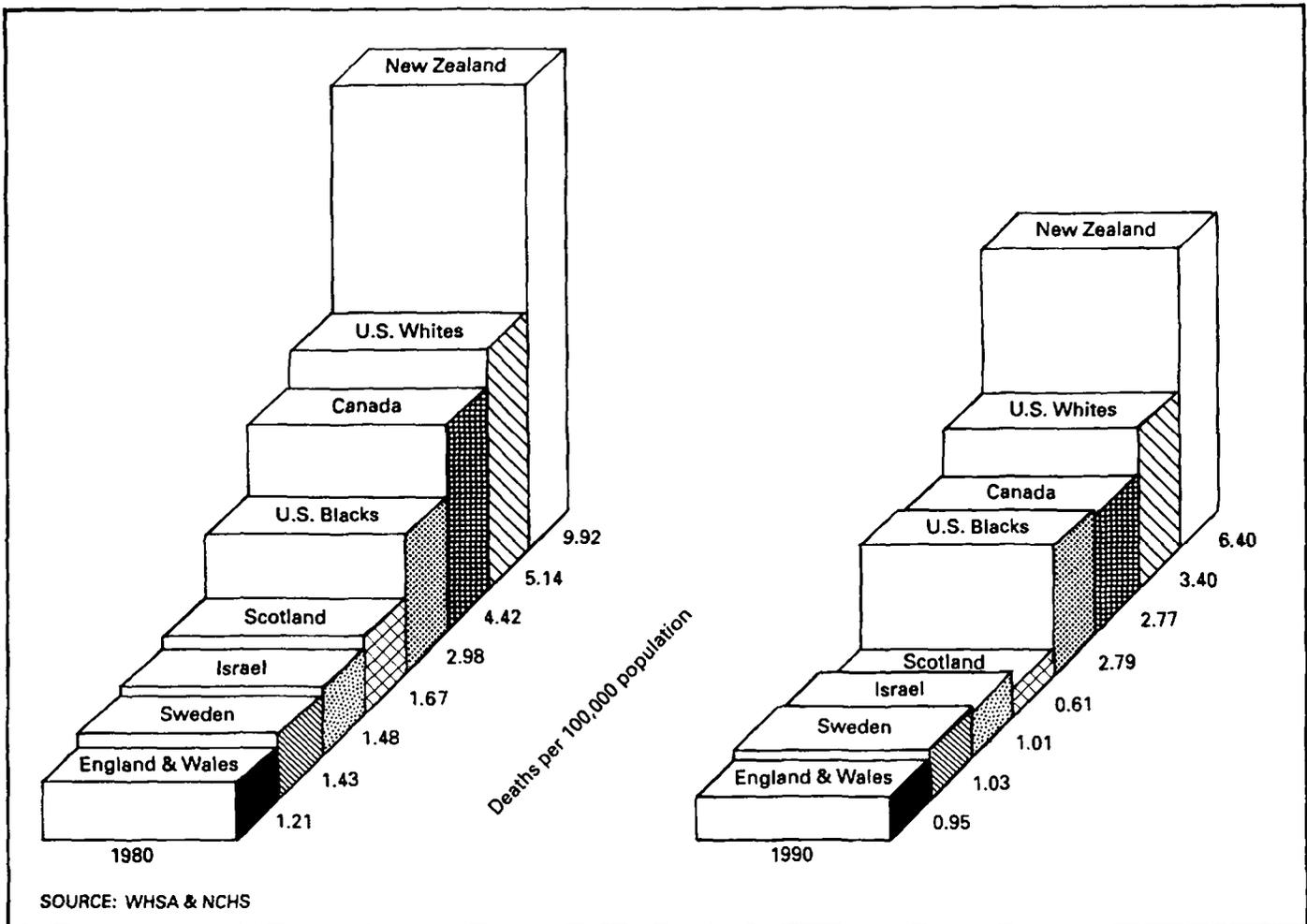


Figure 6. Child mortality due to drownings, etc. in selected countries: 1980 and 1990

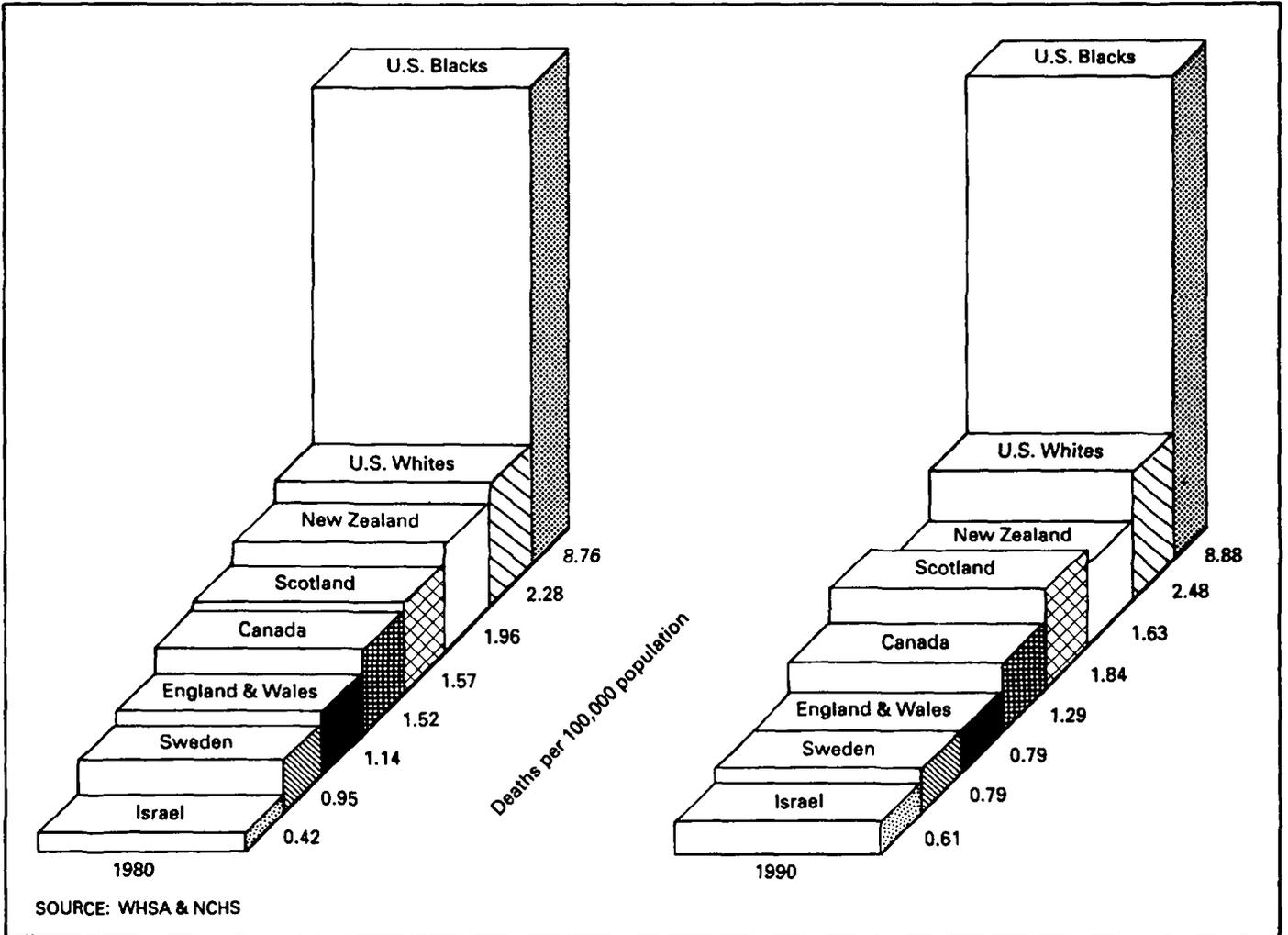


Figure 7. Child mortality due to homicide in selected countries: 1980 and 1990

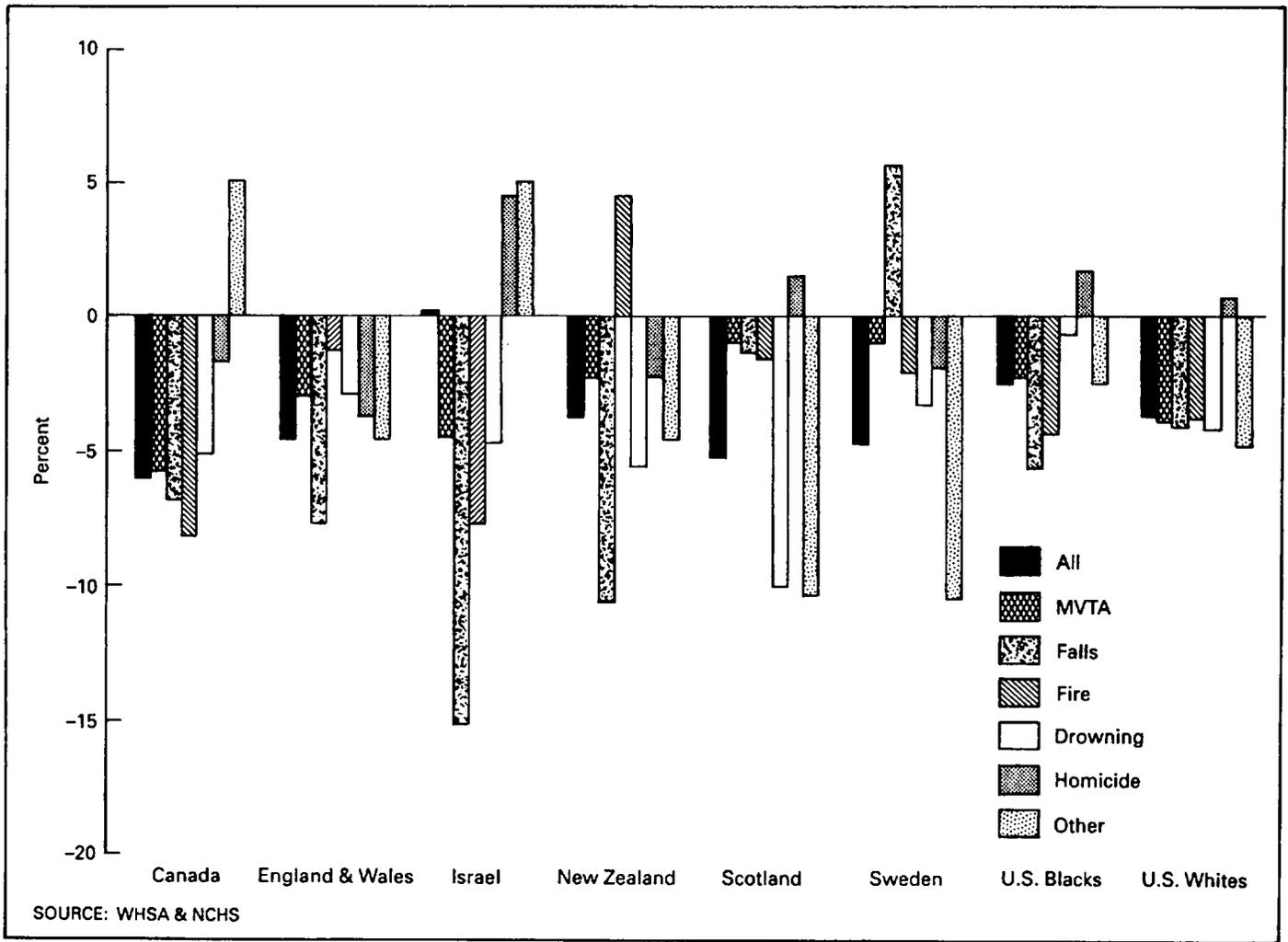


Figure 8. Annual percent change in causes of child injury mortality in selected countries: 1980-1990